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ABSTRACT

A pilot study investigated whether a short training program increased the number of questions involving higher level thinking used by preservice teachers in teaching fiction. Subjects, 22 students enrolled in an elementary reading methods course in a state university in the Northwest, completed pre- and posttests and the training program during four 50-minute classroom sessions. Subjects were presented information concerning four types of question classification systems: the traditional question types often used in basal reading guides (literal, inferential, critical, and creative); a text-explicit, text-implicit and schema-based system; Bloom's taxonomy; and story grammar questions. For the pretests and posttests, subjects were asked to play the role of a teacher preparing for a lesson and to write five questions to be used during class discussion of a particular piece of children's literature. Three question categories--restricted thinking about text; related thinking about text; and extended thinking about text--were identified by analyzing 15 randomly chosen pretests. All questions were then placed into one of the three categories. Results indicated that: (1) the total number and percent of the restricted thinking about text questions dropped from 65 (35%) to 11 (8%); and (2) the total number of extended thinking about text questions stayed approximately the same, 75 (41%) and 77 (56%), thus increasing the posttest extended thinking total by about 15%. Findings suggest that short training programs can influence preservice teachers' questioning practices. (One table of data is included.) (RS)

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Improving Teacher Questioning: A Study of a Training Program

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Improving Teacher Questioning: A Study of a Training Program

During their previous education, preservice teachers have responded to many teacher questions, but have not necessarily considered how to evaluated them. In revising an elementary reading methods course, it was decided an efficient, yet effective program, was needed to increase the higher thinking questions preservice teachers considered for classroom use.

In developing the training program consideration was given the following classification systems: the four traditional question types often used in basal reading guides--literal, inferential, critical and creative; Pearson & Johnson's (1978) text explicit, text implicit and schema-based; Bloom's taxonomy (Bloom et al., 1956); and story grammar questions (Mandler & Johnson, 1977; Stein & Glenn, 1979).

In using questions, preservice teachers need to be aware of the distinction between questions as a basis for discussion (the teacher is a facilitator for the consideration of possible answers) as recommended by Dillon (1988a; 1988b) and using them to evaluate students' comprehension of the text, (the normal pattern is teacher question-student answer, teacher question-student answer, etc. with the answer usually considered right or wrong). To present the value and joy of Dillon's style of discussion as opposed to questions for evaluation, the "Great Books" shared inquiry was modeled.

This action research study was undertaking as a pilot study to investigate whether a short training program (the equivalent of four, fifty minute class periods) increased the number of

questions involving higher level thinking which pre-service teachers planned to use with fiction.

Methods

Subjects

Subjects were 35 students enrolled in an elementary reading methods course in a state university in the Northwest. Thirteen students were dropped because they were missing either the pre- or the post-test, leaving a total of 22 students participating in the study.

Materials

For pre- and post-tests students were asked to assume the role of a classroom teacher preparing for a lesson to be observed by the principal. After reading the story, "Jack and the Beanstalk", they were asked to write five questions to use during their class discussion.

Procedure

During the first class session (all class sessions were 100 minutes) students completed the pre-test. Students were provided whatever time they wanted to complete the questions. They were also informed that their questions would not affect their course grade but would be used as a basis for self evaluation.

In the next two class periods information regarding questioning was presented. As each system for classifying questions was presented, the value of questions involving higher thinking was stressed.

At the second class session students were informed they would experience a shared inquiry discussion. All read "The Rich

Man and the Shoemaker" and then participated in one of three group discussions, led by the instructor and two graduate students familiar with the shared inquiry style.

Next, information regarding the types of comprehension questions (literal, inferential, critical and creative) often used in teachers' editions of basal readers was presented by lecture. Then different lists of five questions, randomly typed from those developed by the students in the pre-test, were handed unsystematically to groups of four or five students. Using the criteria for this traditional classification system, students attempted to classify their set of questions. Class discussion of the results followed.

On the third day the Question-Answer-Relationship Strategy (Q-A-R, Raphael, 1982; Raphael & Pearson, 1985) was presented. The lists of questions from the previous day were randomly distributed and groups of students classified them on the basis of the Q-A-R system: right there, think and search, and on your own. This was followed by discussion of the classifications.

Students were then presented with the criteria for developing interpretive questions along the lines of the Great Books style, stressing inference questions with more than one answer being supported by the text, for example, "Would you say Jack (of "Jack and the Beanstalk") was greedy?" They worked in small groups developing similar interpretive questions based on the story "Stone Soup". Class discussion and sharing followed.

At the end of this period, students were provided the post-test materials and asked to turn in their five questions at

the next class period.

Scoring

One of the authors randomly choose 15 of the pre-tests and identified the types of questions used. Based on the question types, three question categories were identified:

1. "restricted thinking about text", literal or vocabulary questions,
2. "related thinking about text", prior knowledge inferential (information related to the question was not in the text) and creative or going beyond the text (usually in a new application), and
3. "extended thinking about text", requiring an analysis of text information, such as text inferential, both text and prior knowledge inferential, critical, and literary/story grammar questions.

(See Table 1 for question categories and types.) Then that author identified the type of each pre-question before doing the same for the post questions. A few students did not complete five questions but others embedded several questions within one. In such cases each part of the question was categorized as a separate question. Thus the number of questions varies and for both the pre- and post-tests the total number of questions is more than the 110 expected.

Results and Discussion

Looking at the results in Table 1, what stands out is the decrease in the total number and percent of the restricted thinking about text questions, dropping from 65 (35.33%) to 11

(7.97%). At the same time the total number of extended thinking about text questions stayed approximately the same, 75 (40.77%) and 77 (55.80%), thus increasing the post-test extended thinking total by approximately 15%.

The related thinking about text increased approximately 13%. Because the training stressed higher thinking questions in general, it did not refer to the three question categories identified in Table 1. Since the increase for related thinking about text was almost as much as for extended thinking about text, future training should probably distinguish between these categories since they could be a useful tool in the evaluation of questions.

Looking at the specific question types, the major change was the large decrease in the number of literal questions from 60 (32.61%) to 6 (4.35%). Both question types in the related thinking about text increased about the same in terms of percent.

Most of the changes within the extended thinking types of questions were rather small with the exception of the critical type question which changed from 25 (13.59%) to 35 (25.36%). A possible explanation for this increase is that the course helped students to have a better understanding and appreciation of this question type.

The results of this study confirm results of the Wedman & Moutray study (1991), that is, short training programs can influence preservice teachers' questioning practices. However, their study only dealt with text and prior knowledge inference questions while this study not only included various types of

higher thinking questions within a shorter training program, but also decreased the percent of literal questions.

While this is useful information in terms of the course itself, it is only a first step. Two major questions are left unanswered. First, since the post test immediately followed training, are the effects long lasting? Secondly, even if the effects are long lasting, will they be transferred into actual classroom practice.

A second study is underway which will a) use questions for practice classifying from another story rather than the pre- post- story, b) incorporate identifying the question type by its thinking about text category, c) include a delayed post-test, and c) utilize a second rater for reliability of scoring. If these results are encouraging, then transfer into classroom practice can be investigated.

Table 1

Number and Percent by Question Type on Pre- and Post-tests by Question Categories

Question Categories Question Type	Pre-test N	 %	Post-test N	 %
Restricted Thinking about Text				
Vocabulary	5	2.72	5	3.62
Literal	60	32.61	6	4.35
Total	65	35.33	11	7.97
Related Thinking about Text				
Prior Knowledge Inferential	7	3.80	14	10.14
Creative	37	20.11	36	26.09
Total	44	23.91	50	36.23.
Extended Thinking about Text				
Text Inferential	3	1.63	2	1.45
Inferential (both)	28	15.22	25	18.12
Critical	25	13.59	35	25.36
Literary/Story Grammar	19	10.33	15	10.87
Total	75	40.77	77	55.80

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